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ABSTRACT

Two news audience surveys were conducted--one in Great Britain with 489 subjects and one in the United States with 447 subjects--to assess the ability of various types of television news stories to induce learning. The central objective of the research was to identify attributes of specific news stories that had been well or poorly comprehended. For the dependent variable, an average comprehension score for each story was derived from interviews with respondents who had viewed specific broadcasts. Independent variables were measured by conducting a content analysis of each story using a coding scheme proposed by W. Schulz in 1976. Results of the study indicated that length and placement of stories did not significantly affect comprehension. However, the variables involving time with the newsreader on camera and human interest significantly correlated with comprehension. Two visual factors were linked to increased comprehension: amount of visual content and uniqueness of visual content. Attractive, unique pictures that arouse positive emotions and are congruent with verbal content aid comprehension; however, vivid, routine pictures that arouse negative emotions and are incongruent with verbal content may impede learning. Pictures may be used more often with human interest stories because good pictures are usually available. The findings of this research indicate the need to put good pictures into hard news stories in order to facilitate comprehension. Otherwise, good pictures may overwhelm important verbal information in the competition for viewer attention and information processing. (Three pages of references and tables of data are appended.) (SRT)

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LEARNING FROM TELEVISION NEWS:
HOW IMPORTANT ARE STORY ATTRIBUTES?

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ABSTRACT

LEARNING FROM TELEVISION NEWS: HOW IMPORTANT ARE STORY ATTRIBUTES?

Previous research on learning from television news has indicated that many different story attributes may be linked to comprehension and recall of content by viewers. Most of this research has been based on information processing theory and has used experimental methods. Survey data from two national samples in Britain and the U.S. permitted us to examine how various story attributes were related to viewer comprehension. Findings were generally consistent with information processing theory. The best comprehended stories contained a powerful combination of attractive visuals, emotion arousing cues and human interest content. Recommendations are offered for further research.

Introduction

The typical television news broadcast contains a mixture of contrasting or even conflicting news stories. Newscasts frequently juxtapose reports on the actions of world leaders alongside human interest features which highlight dramatic incidents in the lives of average persons. Some stories provide matter-of-fact descriptions of routine happenings while others contain emotional outbursts from event participants. Given the varied content of news, it is likely that some news items will be better understood and remembered than others. But which items will stand out and be better comprehended by most viewers?

Previous survey research as generally failed to study links between the attributes of specific stories and learning. Gross measurements of story content are used by agenda setting researchers (McCombs and Shaw, 1972). The amount of coverage given specific issues over a period of days is matched up with audience rankings of issue importance. Diffusion researchers have studied whether stories which audiences (or researchers) perceive as important are likely to diffuse more rapidly. Uses and gratifications researchers have asked people whether they use media differently to seek news about different topics. For example, are newspapers used to find out about national politics while TV provides information about community events (Katz, et. al., 1973)?

News comprehension studies have found that while learning tends to fluctuate greatly over the course of a broadcast, it is only modestly linked to story position (Stauffer, et. al., 1983; Neuman, 1976). Although initial stories are generally better remembered, it is common for stories placed late in broadcasts to be well remembered also.

In general, survey research suggests that those stories which interest people or which they perceive as personally useful are more likely to be learned (Graber, 1984). However, learning is usually found to be quite low overall. Stories which are repeated may tend to be seen as more important which in turn can result in greater learning. Based on such findings, it is possible to predict that lead stories which deal with important and frequently reported topics should be better remembered. However, such inferences must be considered tenuous in the absence of research which examines what is routinely learned from a large number of different types of news stories.

Experimental research provides a useful basis for predicting learning from individual news items (Woodall, et. al., 1983). Learning has been linked to a variety of story factors including: amount of visual content, position in a broadcast, inclusion of causal explanations, story complexity, congruence between visual and verbal content, and positioning next to similar stories. Some rather strong

effects have been found in these laboratory experiments. But will such effects be found by survey research?

Our Research

In 1978 and 1979, we conducted two news audience surveys, one in Great Britain and one in the U.S. which allow us to make an exploratory assessment of the ability of various types of stories to induce learning. The British survey interviewed 489 adults and was conducted on four evenings in June 1978 by interviewers from the Audience Research Department of the British Broadcasting Corporation (BBC). The U.S. survey interviewed 447 persons and was conducted in 9 American cities on three evenings in June of 1979. Cluster samples of city blocks were drawn and interviewers used a random route method to select up to three respondents in a particular block. The U.S. cities were chosen to represent particular regions of the country. During the 7 evenings on which these surveys were conducted a total of 89 news stories were broadcast. The relatively small number of news stories included in the study (40 in Britain and 49 in the U.S.) and our limited audience samples do not permit us to draw definitive conclusions. Nevertheless, our findings suggest that it may be possible to replicate the findings of experimental researchers using survey techniques. This should encourage others to undertake survey work in this area. It is important to begin to move

story attribute research out of the laboratory and into the field.

The Dependent Variable

A central objective of our research was to be able to identify specific news stories which had been well or poorly comprehended. Only respondents who had viewed specific broadcasts were interviewed. They were asked what they could recall about individual news stories. Brief verbal cues were used to aid their recall. Responses were recorded verbatim by interviewers. These responses were later coded by our research team using a 7 (in Britain an 8 point scale was used but this was abbreviated to 7 when coding the U.S. data) point scale. In this way, comprehension scores ranging from 0 to 7 were obtained for each story. These scores were averaged across the 120 or so viewers of each story to obtain an average comprehension score for every story. This average comprehension score was then used as the dependent variable in the analyses reported below.

Senior news producers at the BBC and each of the three network news operations assisted us in checking the accuracy of our coding. The producers were furnished with all of the audience response data together with our coding of this data. They responded by either agreeing with our codes or suggesting changes. Few changes were suggested. Most of these changes were incorporated into our analysis. In

general, news producers suggested that ratings of audience comprehension be lowered rather than increased.

The Independent Variables

Our independent variables were measured by conducting a content analysis of each story. The coding scheme used was based upon a scheme proposed by Schulz (1976). He developed this scheme relying upon content analyses done in Europe and the U.S. We developed a coding scheme which included the 25 story attribute items shown in table 1. Many of these same items were used to analyze the U.S. stories as shown in table 2. Some items were dropped from the U.S. analysis while several new items were added. In general, items were dropped because they were not found to be significant in the analysis of the British data, because they were found to overlap significantly with other items and/or because they were of less theoretical interest. Several items were added to the U.S. analysis based on a review of information processing research as is explained below.

A content analysis coding sheet was prepared which listed each of these story attributes in the form of five point rating scales. In Britain, a team of three judges was chosen to analyze each story based on these rating scales. Two judges were BBC researchers and one was a senior BBC news editor. The judges used a consensual process to arrive at their final ratings. They first made independent judgments

after viewing a videotape of each story. They then discussed differences of opinion and arrived at a single score to reflect consensual agreement on each scale. For example, if two judges rated a story "3" on human interest but the third rated it "4", a consensual score of "3" would have been recorded if no agreement could be reached. Few serious disagreements arose, the judges' scores were usually identical or were within a point of each other.

In the U.S., a team of three judges analyzed each story using the rating scales. The judges were all researchers involved with our news research team. Unlike the British analysis, a consensual process was not used to determine the final ratings. After each judge watched each story on videotape, the tape was stopped and the story was briefly discussed. Then each judge made an independent rating on each scale. The ratings were added together and a mean rating was calculated for each. Few differences were found in the ratings made by judges. Most ratings were within one point of each other.

Story Placement and Length

Much previous research has examined the relationships between comprehension and both story length and story placement in a TV news broadcast. Length and placement have both been found to be positively related to comprehension. While our research also finds modest relationships, length and placement were not found to be especially strong factors

in comparison to other predictors. We found that viewer comprehension fluctuated greatly over the course of each of the 7 broadcasts studied in Britain and the U.S. This occurred even when a single network, like the BBC, was studied over the course of several evenings. During several broadcasts, first and last stories were well comprehended but this was not true for all. On the basis of our limited research, we cannot determine the degree to which such fluctuations are a function of substance of the news stories on a given day, how much a function of the structure provided by a particular news producer and how much a function of the journalistic skills of a specific group of reporters. Such questions can only be settled by future research.

A significant difference was found between Britain and the U.S. when story length and story placement were correlated. In Britain, a strong correlation ($r=.50$) was found between placement of the 40 stories and their length. Longer stories were consistently placed near the beginning of broadcasts. In the U.S. a weak negative correlation of $r= -.19$ was found between story position and length. Long, feature stories were routinely placed near the end of U.S. broadcasts while groups of short items were placed just prior to commercial breaks.

In both nations, story length was strongly associated with comprehension. In Britain, the correlation was $r= .55$ while in the U.S. it was $r= .50$. The consistency in this

correlation is noteworthy given the quite significant variation in story positioning which we noted above. Apparently, longer stories are better comprehended no matter where they are placed.

Story Attributes

Tables 1 and 2 report the relationships between the various story attributes and comprehension for the British and U.S. data, respectively. In table 1, only nine of the 25 attributes were significantly correlated with comprehension. Of these nine factors, five predominate with correlations above .45: length, proportion of time with newsreader on camera, human interest, personalization, and overall excitement. These five variables fall into two general categories, time length and human interest.

The U.S. data reported in table 2 show a similar pattern. Stories with surprising information were more likely to be comprehended by Americans ($r = .26$ in Britain and $r = .45$ in the U.S.). One relationship was not found in the U.S. which was found in Britain. The British were less likely to comprehend items which were similar to preceding items. For Americans, this relationship was insignificant. In general, the story attributes which were linked to human interest (personalization, excitement) were somewhat less strongly linked to comprehension in the U.S. than in Britain. This may simply be due to the substance of the stories broadcast during the time of our research. For example, there were

during the time of our research. For example, there were several rather dramatic hard news stories broadcast in the U.S. which were well understood. This was less true in Britain.

The results in these tables suggest that many story characteristics which have been considered important by scholars and by journalists may not be linked to comprehension. These attributes include: conflict, physical proximity to the viewer, relevance of a story to society, ethnocentrism, prominence of persons in a story and amount of interpretation. Two other factors were linked to comprehension: story structure and surprise. Story structure was an index of the degree to which a story was structured by a standardized story formula or whether it unfolded in an unusual manner. Surprise was an index of the number unusual elements contained in a story. In general, Americans appear to be more sensitive to these two attributes than the British.

A test of the robustness and clarity of our British findings was made possible by the introduction of two alternate indices of comprehension into our analysis. The results are shown in columns two and three of table 1. Comprehension was indexed by a measure of the number of story points mentioned and by the proportion of people who scored five or more on the comprehension scale.

The attributes which were added to the U.S. analysis proved to be rather strongly associated with comprehension. Of the seven variables added, five were found to be significantly correlated with comprehension (see table 2). The most interesting of these variables involve measures of visual content. These items were added to the analysis based on previous experimental research which has found that visual factors were linked to news story recall. Some information processing theorists have developed a dual coding theory to explain processing of audiovisual information. They argue that visual information is coded separately from verbal information using qualitatively different coding schemes. Since the coding of these two forms of information occurs simultaneously, visual cues which trigger recall of visual information might assist recall of congruent (similar) verbal information. Similarly, verbal cues might trigger recall of congruent visual information. However, in either case, incongruent or dissimilar information would not be recalled. For this reason, highly powerful but irrelevant pictures in a news story would serve to distract viewer attention from verbal content, would impede learning of verbal information and would not later provide a basis for assisting recall of the verbal content. We hoped to assess whether news stories which contained large amounts of powerful but irrelevant visual content would be as poorly remembered as dual coding theory predicts.

We included several new measures of the emotional content of news stories in an effort to extend our findings in the British data concerning the higher comprehension of human interest stories. We speculated that the most salient feature of human interest stories is their emotional content -- the visual and verbal cues which tend to arouse strong emotions such as sympathy, fear, sorrow, delight, etc. Such emotions can be both positive and negative. We wanted to know if the "good" news stories which aroused positive emotions would be better comprehended than those which aroused negative emotions. Would the direction of the emotions aroused make any difference in level of comprehension?

In our analysis of the U.S. data, we also sought to investigate the interrelationship of the various story attributes. This was done by calculating the intercorrelations for the attribute items as reported in table 3. The strength of these correlations should reflect the degree to which stories tend to contain similar attributes. The clustering of items can be found by isolating sets of items which are strongly related to each other but not to other items. The strongest cluster of items includes the visual attributes as well as the human interest attributes: personalization, human interest, overall excitement, amount of visual information, vividness of visual information, strength of emotional content, and uniqueness of

visual information. Each of these attributes was individually linked to comprehension and their high intercorrelation makes it difficult to assess the relative power of each in enhancing comprehension.

We identified ten stories which possessed all of these attributes at rather high levels. Five dealt with the Pope's trip to Poland, others dealt with the DC-10 crash in Chicago, the death of actor Jack Haley, a freighter fire, the collapse of a Kansas City arena, and a race between computerized mice.

It is not surprising to find that so many stories combine strong visual attributes with strong human interest attributes. Epstein (1973) reports that news program producers select stories based on the presence of such attributes. With human interest news, there will frequently be a number of equally relevant (or trivial) stories available for broadcast so it is logical to choose those which include attractive visuals.

Our findings suggest that this combination of human interest and attractive pictures is quite successful in communicating information. However, it is important to keep in mind that the learning induced by such stories may be quickly lost. We measured learning within three hours of each broadcast. Further research is necessary to assess whether this learning is likely to persist. The mainpoints of such stories are usually very simple and concrete -- someone famous died, a building collapsed, a ship burned, or

the Pope went somewhere. Such points can be easily shown in pictures which graphically portray the mainpoint of the story. When direct visual coverage is lacking, drawings can be used or the graphic descriptions of eyewitnesses. Such stories are ideally suited to communication via television. But is the learning which they induce likely to persist and prove useful to viewers?

Other clusters of attributes were less strongly related to comprehension and include fewer items. The following items are intercorrelated at the .45 level or more: surprise, unusual structure and level of excitement. In general, this combination of attributes is found in breaking news stories about accidents or disasters. For such events, facts about causes or principle actors are unknown or highly speculative. Mysteries raised by the events cannot be resolved. Unusual facts may be presented even though explanations cannot be offered. Conventional story formulas simply may not permit adequate organizing of facts. Visual information may be lacking so that dramatic eyewitness descriptions must be substituted. In our study, examples of such stories included news about the impending fall of Skylab, a subway accident in which a young girl was pushed under a subway train, the FAA grounding of all DC-10's after an unexpected flaw was found in wing pylons, and the Pope's visit to concentration camps.

Another cluster of attributes combined conflict, criminality and negative emotional content. Such stories are

common. News frequently reports major crimes especially if conflict of some kind is involved. But none of these attributes was significantly linked to comprehension. This contradicts the commonsense notion of many journalists that audiences are fascinated by crime and are avid consumers of "blood and guts". Crime reports have become commonplace. They are not likely to attract much interest if they have no pictures, originate from remote places and involve routine mayhem. In our study such coverage included news about the murder of a witness in a Ku Klux Klan trial and the subsequent arrest of a suspect. This coverage spanned two broadcasts and each time was among the least well comprehended items.

Multiple Classification Analysis

Multiple classification analysis(MCA) was used to assess a series of multivariate relationships. MCA permits variables measured on nominal or ordinal scales to be used as independent variables or covariates. Only the dependent variables is assumed to be measured on an interval scale. MCA provides the nonlinear equivalent of regression analysis or path analysis. We applied this same technique to the analysis of our story attributes data, using our measure of comprehension as the dependent variable. Both the British and U.S. data were analyzed. As was noted above, the MCA analysis technique used is limited in terms of the number variables which can be analyzed at one time. A maximum of 5

independent variables and 5 covariates can be controlled. Our selection of predictor variables was based upon the results of our bivariate analyses. We selected those variables which had been most strongly linked to comprehension and then used MCA to investigate the relative strength of each in relation to the others. Thus, MCA allows us to address such questions as whether length of story time makes much of a difference, once other factors such as personalization, human interest or excitement have been taken into account. Once predictor variables were selected, they were tricotemized to facilitate the MCA analysis. The cutting points were selected to create three groups which were nearly equal in size for each variable: a high group, a medium group and a low group. Occasionally, the frequency distributions of the predictor variables was such that it was not possible to create groups which were exactly equal size. While we have only reported MCA analyses below, we did conduct comparable analyses using regression techniques and path analysis. The results of these linear analyses were quite consistent with the MCA results.

The British Analysis

Table 4 reports the results of the British MCA. Column one of this table shows the average comprehension scores for each of the tricotemized independent variables. These scores imply that there is a rather linear and monotonic relationship between these variables and comprehension. In

general the differences between the low and medium groups is smaller than that between the medium and high groups. There is sufficient nonlinearity to warrant the use of MCA. Column two shows the comprehension scores after they have been corrected by MCA to take into account the influence of the other independent variables. Beside this column we have calculated the difference between the low and high groups. By looking down this list of differences it is possible to quickly ascertain which variables are most strongly linked to increased comprehension. Two of the variables are revealed to be quite weak in relation to the others: percent of camera time on the newsreader and degree of personalization in the story. In both cases, the high group minus low group figure is negative. Both of these variables were highly correlated with story length and human interest respectively. Apparently, they explain little additional variation in comprehension and what they do explain is the inverse of their bivariate relationship. Both factors may actually reduce comprehension in brief stories or those which lack human interest.

Degree of human interest emerges as the major MCA predictor of comprehension. A difference of 2.2 points separates the 14 stories scored low in human interest from the 10 which were scored high. Even though human interest and excitement were intercorrelated, excitement does independently explain considerable variance. The 14 stories

scored low in excitement averaged 2.0 points while those scored high in excitement averaged 3.5 points. Finally, story length is important but it ranks third after human interest and excitement. A difference of 1.1 points separates the low and high groups on this variable. Thus, the British data support the view that human interest is the strongest factor affecting comprehension of news closely followed by excitement and story length.

The U.S. Analysis

A somewhat more complicated analysis was conducted of the American data. A large set of predictor variables was chosen based upon the bivariate analysis and our review of information processing research. We wanted to see whether some theoretically interesting variables which were not good bivariate predictors might emerge as stronger predictors in the MCA. Tables 5 and 6 report the results of two separate but complementary analyses. In the analysis shown in table 5, one cluster of variables was entered as independent variables while a second cluster was entered as covariates. In table 6, the same two clusters are shown but they have been entered in reverse order such that the independent variables are now the covariates while the covariates in the first analysis are treated as independent variables.

The results reported here summarize a long series of analyses in which various sets of predictor variables were tried. A search was made to isolate powerful predictors and

to locate theoretically interesting variables which had some predictive power independent of these strong explanatory variables. Table 5 reports results found when the five strongest predictor variables were used as the dependent variables and five theoretically interesting variables were added as covariates. These results complement and extend the British analysis. As was noted in our discussion of the bivariate results, visual factors were found to rival human interest variables in predicting comprehension. MCA permitted us to assess the relative power of these factors. The human interest related variables "excitement" and "personalization" which were found to be important in the British analysis proved to be so weak that they were discarded from the final set of strong predictors. Their place was taken by three visual factors and an index of the strength of emotional content.

The analysis reported in table 5 can be interpreted as implying that these visual and emotional story attributes constitute more direct measures of the attributes of human interest content which link such content so strongly with comprehension. Thus, it is not surprising to find that the predictive power of "human interest" disappears when the other indices are controlled. All are highly correlated with human interest (see table 3) and when they are controlled, there is little additional variance for human interest to explain.

These results suggest that use of attractive pictures and the presence of cues which arouse emotions contribute greatly to the success of human interest stories. When MCA statistically controls for these variables, the relationship between human interest and comprehension disappears. It should be noted that the initial relationship between human interest and comprehension was considerably weaker than that found in the British data. Additional research will be necessary to determine if control of visual and emotional story attributes serve to attenuate this relationship in Britain.

The most intriguing finding reported in table 5 is that when the other story attributes are controlled, the relationship between "vividness of visual content" and comprehension is negative. This implies that when other visual factors are controlled, highly vivid visuals may reduce comprehension. This relationship is the strongest one reported in the table: a difference of almost two points between the high and low groups. The relationship is monotonic and linear. This finding confirms an hypothesis which can be derived from dual coding theory. This theory argues that visual content must be coded separately from verbal content using a quite different coding scheme. When pictures are congruent and not visually compelling, they will be routinely coded and can actually facilitate recall of verbal content which is coded simultaneously. But when

visuals are incongruent and vivid, an extraordinary effort must be made to code them. Since this effort must be made at the same time that verbal content is being coded, it may reduce the efficiency of the verbal coding and result in the failure to properly code important verbal information. While our results appear to support this theory, they must be considered quite tentative. Future research should explore these relationships.

The two visual factors which are linked to increased comprehension are the "amount of visual content" and the "uniqueness of visual content". Stories which contain either large amounts visual content or highly unusual visual content may be better comprehended. When discussing these factors above, we noted that it is common for human interest stories to be chosen for broadcast precisely because these factors are present. Typically a large pool of human interest stories is available. This pool is growing as affiliated stations compete to supply their networks with stories. While affiliates may have little control over the quality of the hard news which they generate because this is so dependent upon the events involved, they can strive to produce attractive human interest content. The result may be that the powerful pictures in human interest content may divert viewer attention away from the effective processing of more important "hard news" stories. This deserves further research.

The findings in table 5 also indicate that news content which arouses strong emotions may increase comprehension. This effect appears to operate independently of the amount and type of visual content. The difficulty of interpreting this finding is increased by its strong association with vividness of visual content. As we have already noted.

Emotional Content Variables

The findings in table 6 also indicate that news content which arouses strong emotions may increase comprehension. This effect appears to operate independently of the amount and type of visual content. The difficulty of interpreting this finding is increased by its strong association with vividness of visual content. As we have already noted, vividness of visual content appears to reduce comprehension when other factors such as strength of emotional content are controlled. The two variables, though highly correlated, appear to have opposite effects upon comprehension. This finding requires further study.

We are also concerned about the interpretation of this finding due to the nature of the specific stories which we studied. At least one story each day dealt with the Pope's trip to Poland and these were consistently rated by our judges as arousing high levels of emotion as well as including vivid visuals. At the same time, the mainpoint of these stories was often quite simple and shown visually: the

Pope went the the deathcamps, or was tired today, or spoke out against the Communist regime.

If our finding about the linkage between strength of emotional content and comprehension is accurate, it may lend support to another aspect of information processing theory. One concern of information processing theorists is in understanding which attributes of content lead to deeper processing of new information. It is possible that content cues which arouse emotion will trigger deeper processing. Perhaps, this process works best in the absence of vivid visual content. If vivid visuals are present, necessary verbal information will not be stored in short-term memory. If emotional arousal later leads to deeper processing, there will not be adequate information stored in short-term memory.

The Second MCA Analysis

Table 6 reports an MCA analysis in which the choice of the five independent variables was motivated by information processing theory. As column one indicates none of these variables was an especially powerful bivariate predictor of comprehension. Two of these variables were considered in the British analysis: surprise and amount of interpretation. Surprise is an index of the degree to which an event is unexpected or nonroutine. It was found to be a respectable bivariate predictor in both the British and U.S. analyses. The MCA results suggest that it has some independent

predictive power but this power is rather weak when human interest related and/or visual attributes are controlled.

Interpretive Content

In the bivariate analysis of the U.S. data reported above, the amount of interpretation was linked to decreased comprehension. This finding contradicted information processing experiments by Findahl and Hoijer (1976) as well as the modest zero-order correlation found in the British data. It is clear from the MCA analysis that amount of interpretation as we measured it has little independent predictive power. It is possible that stories which include interpretation are, on the whole, more complex than those which do not. Stories which do not include interpretations may tend to be simple, concrete presentations of factual information or they may be touching human interest tales. The points of such stories may be easier to grasp than the points of more complex, abstract stories in which alternative viewpoints of events are presented.

The ability of interpretive content to enhance information processing clearly deserves further study. Much may depend upon the context in which interpretations are routinely offered. In our study, one quite poorly comprehended story dealt with competing interpretations of the progress being made to reduce air pollution. The story was long and made extensive use of visual content but still was not understood. The inclusion of competing explanations

may have confused rather than assisted viewers. The direction of emotional content had a very small bivariate relationship with comprehension. However, this relationship was increased when other variables were controlled. The finding tends to confirm the view that audiences respond better to good news rather than bad news. Perhaps, the arousal of positive emotions is more likely to trigger deep-processing of information than is the arousal of negative emotions.

Story Relevance

The measure of story relevance was found to be a poor predictor of comprehension even when other variables were controlled. It is important to remember that this is an index of the relevance as perceived by three judges rather than a measure of the relevance assigned by viewers. Thus, this finding does nothing to contradict experimental research which has found strong links between story relevance and learning. The finding does mean that stories which academic researchers consider to be important to society are not being communicated any more effectively than are routine human interest stories.

Congruency of Visual and Verbal Content

We were encouraged that our index of "congruency between visual and verbal content" improved as a predictor when other variables were controlled. A small, but clear linear

relationship can be noted in column three. This is sufficient to make it the best predictor among our second set. This association was predicted by information processing theory and several experimental studies have found evidence to support it. Nevertheless, more survey research will be necessary to determine if this association can be found in field settings.

Discussion

Our findings confirm some long-held notions of journalists but disconfirm others. Television emerges as a powerful visual medium which can use pictures effectively to induce learning of information. Attractive, unique pictures which arouse positive emotions and are congruent with verbal content may add considerably to the power of a story to induce learning. On the other hand, vivid, routine pictures which arouse negative emotions and are incongruent with verbal content may impede learning. Pictures may be more likely to regularly enhance human interest stories since such stories will be produced and broadcast largely because "good" pictures are available. A great deal of luck and/or journalistic skill may be necessary to put such pictures into a breaking, "hard news" story. Nevertheless, our findings imply that such an effort does need to be made. There may be a very real danger that "good" pictures will "drive out" or overwhelm good verbal information in the competition for viewer attention and information processing.

The Challenge to Journalists and Researchers

Our results shed useful insight on the task which journalists face each day as they strive to serve audiences as viewers desire to be served. It may be relatively easy for them to create the ideal human interest story which in turn is very well received and appreciated by average viewers (Turow, 1983). But it is likely to be quite hard to develop and present complex and relatively abstract hard news stories about breaking events. It is all too easy to simply string together a jumble of quickly assembled pictures and words and use the excuse that time does not permit an effective story to be constructed. It can also be easy to take a complex set of facts and simplify them so greatly that average viewers gain misimpressions concerning events. Pictures and words taken out of context can easily mislead rather than inform.

Our findings suggest that it will be worthwhile to seek to develop journalistic strategies which improve the quality of hard news coverage. Each day news viewers face a 30 minute flood of pictures and words from which they must sort out the useful elements. Our findings and those of other researchers suggest that average viewers are not coping as well with this flood as they might if they were given assistance by program producers.

The results reported are exploratory in nature. Research will be necessary which expands upon this beginning and seeks to provide definitive results which can be trusted

to guide news production. Development of information processing theory and of both experimental and survey methods will be necessary. We are only beginning to understand why television has not proved to be an important medium of the most useful forms of public information. Television may still possess a largely untapped ability to systematically and effectively communicate significant amounts of useful information to even apathetic or poorly informed viewers. Television may already be reaching such viewers but the quality and substance of the learning which it induces is likely to be quite inadequate. The superficial information now routinely learned from TV news may be doomed to rapid decay in short-term memory.

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Table 1
Correlation of News Story Attributes
with Story Comprehension- British Data

Story Attributes	Correlation with % Comprehension of Story	Correlation with Information Points	Correlation with % of Items over 5 Scale Points
Objective Factors			
1. Length of Story (in seconds)	.50	.55	.22
2. Position of Item in Newscast (first-last)	* (-.05)	* (-.02)	* (.10)
3. Percent of Item Newscaster Only	-.55	-.42	* (-.18)
Ratings - "Objective" Factors			
1. Depth of theme (1 None—5 Long Established)	* (-.15)	-.22	* (-.15)
2. Duration (1 Immediate—5 Long Term)	* (.08)	* (.03)	* (.00)
3. Internal Proximity (1 Outside—5 Near)	* (.07)	* (.06)	* (.12)
4. External Proximity (1 Far—5 U.K.)	* (-.11)	* (.10)	* (-.04)
5. Political-Cultural Proximity	* (-.05)	* (.00)	* (-.01)
6. Centrality (1 Minor—5 Major Powers)	-.24	-.26	-.21
7. Prominence (1 Ordinary—5 Influential People)	* (.04)	-.21	* (.03)
8. Losses (1 None—5 Heavy)	* (-.10)	.11	* (-.04)
Ratings - "Subjective" Factors			
1. Relevance (1 None—5 Great)	* (.10)	-.26	* (-.16)
2. Duration in News (1 One Day—5 Over a Year)	* (-.04)	* (-.08)	* (-.11)
3. Surprise (1 Routine—5 Unforeseen)	.26	.32	.22
4. Structure (1 Stereotyped—5 No Known Pattern)	.23	.22	.23
5. Portrayal (1 Simple—5 Complex)	* (-.06)	* (-.10)	* (-.12)
6. Conflict (1 None—5 Major)	* (.01)	* (.07)	* (-.13)
7. Criminality (1 None—5 Life Threatening)	* (.02)	.25	* (-.03)
8. Success (1 None—5 Great)	* (.10)	* (.08)	* (.15)
9. Personalization (1 None—5 Focus on People)	.45	.57	.39
10. Ethnocentrism (1 Foreign News—5 Domestic News)	* (.07)	.21	* (.10)
11. Human Interest (1 None—5 Heavy)	.58	.72	.48
12. Overall Excitement (1 None—5 Extreme)	.52	.64	.53
13. Connection to Preceding (1 None—5 Extreme)	-.24	-.30	-.22
14. Amount of Interpretation (1 None—5 Extreme)	* (.16)	* (.15)	.21

* Correlation (Pearson's r) not significant at the .05 level.

Table 2
Correlation of News Story Attributes
with Story Comprehension- U.S. Data

Story Attributes Story	Correlation with of % Comprehension
Objective Factors	
1. Length of Story (in seconds)	.27
2. Position of Item in Newscast (first-last)	.31
Ratings - "Subjective" Factors	
1. Relevance (1 None—5 Great)	* (.16)
2. Duration in News (1 One Day—5 Over a Year)	* (-.18)
3. Surprise (1 Routine—5 Unforeseen)	.45
4. Structure (1 Stereotyped—5 No Known Pattern)	.36
5. Portrayal (1 Simple—5 Complex)	* (.01)
6. Conflict (1 None—5 Major)	* (-.03)
7. Criminality (1 None—5 Life Threatening)	* (-.10)
8. Success (1 None—5 Great)	* (-.11)
9. Personalization (1 None—5 Focus on People)	.36
10. Ethnocentrism (1 Foreign News—5 Domestic News)	* (.18)
11. Human Interest (1 None—5 Heavy)	.36
12. Overall Excitement (1 None—5 Extreme)	.50
13. Connection to Preceding Item (1 None—5 Extreme)	* (.08)
14. Amount of Interpretation (1 None—5 Extreme)	* (-.17)
15. Amount of Visual Content (1 None—5 Large)	.47
16. Abstractness of Visuals (1 Content—5 Abstract)	-.24
17. Vividness of Visuals (1 Weak—5 Strong)	.44
18. Strength of Emotional Content (1 Weak—5 Strong)	.55
19. Direction of Emotional Content (1 Neg.—5 Pos.)	* (.12)
20. Uniqueness of Visuals (1 Usual—5 Unusual)	.47
21. Congruency of Visual/Verbal Content (1 Congruent—5 Incongruent)	* (.00)

* Correlation (Pearson's r) not significant at the .05 level.

Table 3 - Intercorrelations Between Story Attributes
12 Selected Attributes - U.S. Data

Attributes	1	2	3	4	5	6	7	8	9	10	11	12
1. Surprise	1.0											
2. Structure	.59	1.0										
3. Conflict	.25	.37	1.0									
4. Criminality	.25	.22	.72	1.0								
5. Personal- ization	.18	.43	-.03	.09	1.0							
6. Human Interest	.19	.41	.01	.15	.91	1.0						
7. Excitement	.46	.54	.12	.08	.69	.75	1.0					
8. Amount of Visuals	.14	.53	-.14	-.24	.64	.63	.61	1.0				
9. Vividness of Visuals	.11	.49	-.12	-.19	.68	.72	.71	.92	1.0			
10. Strength of Emotional C.	.34	.62	.08	.08	.72	.73	.77	.74	.81	1.0		
11. Direction of Emotional C.	-.30	-.18	-.54	-.46	.27	.27	.08	.36	.32	.16	1.0	
12. Uniqueness of Visuals	.17	.49	-.12	-.22	.61	.66	.66	.90	.96	.76	.29	1.0

The direction of attributes is given in table 7.3. Correlations are Pearson Correlation Coefficients.

Table 4 - Differences in Story Comprehension as a
Function of Ten Story Attributes - British Data
Average Comprehension for All Stories = 2.9

Attribute	Level	Number of Stories	Unadjusted Average Comprehension	Adjusted for Independents
Length of Story	Low	16	2.4	2.4
	Medium	15	2.8	2.9
	High	9	3.8	3.5
	Low to High Difference =		+1.4	+1.1
% of Newsreader, on Camera	Low	13	2.1	3.0
	Medium	11	3.7	3.6
	High	16	3.5	2.3
	Low to High Difference =		+1.1	-.7
Human Interest	Low	13	1.9	2.4
	Medium	10	2.7	2.6
	High	17	3.8	4.6
	Low to High Difference =		+1.9	+2.2
Excitement	Low	14	1.7	2.0
	Medium	16	3.4	3.3
	High	10	3.6	3.5
	Low to High Difference =		+1.9	+1.5
Personal- ization	Low	15	2.3	3.3
	Medium	13	2.5	2.0
	High	12	4.1	3.2
	Low to High Difference =		+1.8	-.1

The table reports a Multiple Classification Analysis in which column one shows the average comprehension for each level of each attribute considered independently. Column two shows the average comprehension for each level of each attribute when MCA is used to statistically control for the other four independent variables.

Table 3
Table 2
Correlation of News Story Attributes

Table 5 - Differences in Story Comprehension as a
Function of Ten Story Attributes - U.S. Data
(Average Comprehension for All Stories = 2.7)

Attribute	Level	Number of Stories	Unadjusted Average Comp.	Adjusted for Ind.	Adjusted for Ind. and Cov.
Human	Low	13	2.4	2.8	2.8
Interest	Medium	18	2.3	2.5	2.7
	High	18	3.3	2.8	2.7
Low to High Difference =			+0.9	0	-0.1
Amount of	Low	17	2.2	2.0	2.1
Visual	Medium	15	2.6	2.8	2.9
Content	High	17	3.3	3.3	3.2
Low to High Difference =			+1.1	+1.3	+1.1
Vividness	Low	17	2.3	3.7	3.6
of Visual	Medium	15	2.6	2.7	2.8
Content	High	17	3.2	1.7	1.7
Low to High Difference =			+0.9	-2.0	-1.9
Strength	Low	16	2.1	2.1	2.2
of Emotional	Medium	15	2.5	2.4	2.4
Content	High	18	3.3	3.4	3.4
Low to High Difference =			+1.2	+1.3	+1.2
Uniqueness	Low	16	2.2	2.4	2.3
of Visual	Medium	16	2.6	2.6	2.5
Content	High	17	3.3	3.0	3.3
Low to High Difference =			+1.1	+0.6	+1.0

The table reports a Multiple Classification Analysis in which column one shows the average comprehension for each level of each attribute considered independently. Column two shows the average comprehension for each level of each attribute when MCA is used to statistically control for the other four independent variables. Column three shows the average comprehension for each level of each independent variable when all of the other independent variables and a set of five covariates (story relevance, surprise, amount of interpretation, direction of emotional content and congruency of visual and verbal content) are controlled.

Table 6 - Differences in Story Comprehension as a
Function of Ten Story Attributes - U.S. Data
Average Comprehension for All Stories = 2.7

Attribute Comp.	Level	Number of Stories	Unadjusted Average	Adjusted for Ind.	Adjusted for Ind. and Cov.
Story	Low	14	2.8	2.6	2.8
Relevance	Medium	17	2.4	2.4	2.4
	High	18	2.8	3.0	2.8
	Low to High Difference =		0	+4	0
Surprise	Low	20	2.3	2.2	2.4
	Medium	14	2.7	2.7	2.6
	High	15	3.1	3.3	2.9
	Low to High Difference =		+1.1	+1.1	+5
Amount of	Low	18	2.9	2.9	2.9
Interpret-	Medium	17	2.5	2.3	2.5
ation	High	14	2.7	2.6	2.7
	Low to High Difference =		-.2	-.3	-.2
Direction	Negative	16	2.6	2.3	2.4
of Emotional	Neutral	16	2.7	2.7	2.6
Content	Positive	17	2.7	3.1	2.9
	Low to High Difference =		+1	+8	+5
Congruency	Low	13	2.5	2.7	2.6
of Visual	Medium	20	2.7	2.5	2.4
and Verbal	High	16	2.7	2.9	3.2
	Low to High Difference =		+2	+6	+6

The table reports a Multiple Classification Analysis in which column one shows the average comprehension for each level of each attribute considered independently. Column two shows the average comprehension for each level of each attribute when MCA is used to statistically control for the other four independent variables. Column three shows the average comprehension for each level of each independent variable when all of the other independent variables and a set of five covariates (human interest, amount of visual content, vividness of visual content, strength of emotional content and uniqueness of visual content) are controlled.